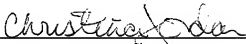


<b>PRE-APPEAL BRIEF REQUEST FOR REVIEW</b>		Docket Number: MP0337/13361-055001
	Application Number 10/693,566	Filed October 23, 2003
First Named Inventor Ravi Narasimhan		
	Art Unit 2611	Examiner Khai Tran
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a Notice of Appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s).          Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <p><input type="checkbox"/> applicant/inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest.          See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record <u>58,720</u>          (Reg. No.)</p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34.          Registration number if acting under 37 CFR 1.34 _____</p> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.</p>		
		 _____ Signature Christina D. Jordan _____ Typed or printed name (650) 839-5070 _____ Telephone number August 13, 2007 _____ Date
<input checked="" type="checkbox"/> Total of one forms are submitted.		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	Ravi Narasimhan	Art Unit :	2611
Serial No. :	10/693,566	Examiner :	Khai Tran
Filed :	October 23, 2003	Conf. No. :	3596
Title :	A MIMO-OFDM PREAMBLE FOR CHANNEL ESTIMATION		

**MAIL STOP AF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

This brief is in response to legal and factual deficiencies in the final Office Action mailed May 31, 2007.

Claims 1-82 are currently pending. Claims 1, 10, 16, 20, 29, 35, 44, 50, 59, 65, and 74 are independent. The Examiner rejected claims 1-82 under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 7,088,782 B1 ("Mody"). Applicant respectfully traverses these rejections.

- I. The cited art does not show a first training symbol that comprises a plurality of data symbols, wherein each of the plurality of data symbols corresponds to different ones of a plurality of tones, and wherein each of the plurality of antennas transmits corresponding ones of the plurality of data symbols.**

Claim 1 is directed to a method that includes transmitting a first training symbol on a plurality of antennas. The first training symbol comprises a plurality of data symbols. Each of the plurality of data symbols corresponds to a different one of a plurality of tones. Each of the plurality of antennas transmits a corresponding one of the plurality of data symbols.

Mody shows a wireless communication system for synchronizing and transmitting data. (Abstract). Mody's system maps input binary data into data symbols, bundles the input data symbols into data frames, and distributes the data frames among multiple sub-channels called "transmit diversity branches." (Col. 3, line 61–col. 4, lines 5; col. 4, lines 14-19; col. 5, lines 37-57). Each sub-channel corresponds to a unique frequency. (Col. 5, lines 59-67; Fig. 4). Symbols indicating various sub-channel calibration values are inserted periodically between the data symbols in each data frame. (Col. 6, lines 1-5). Each data frame is modulated at the unique frequency of its sub-channel and transmitted by a corresponding antenna. (Col. 4, lines 24-27).

The Examiner asserts that Mody shows Applicant's claimed first training symbol that comprises a plurality of data symbols, wherein each of the plurality of data symbols corresponds to different ones of a plurality of tones, and cites to passages of Mody that describe Mody's data frames. Applicant acknowledges that Mody's data frames include data symbols. More specifically, Mody's data frames include data symbols representing input binary data, as well as "pilot" and "training" symbols representing sub-channel calibration and synchronization values. (Col. 6, lines 1-5, 26-34). However, the data symbols of Mody's data frames do not each correspond to different ones of a plurality of tones, i.e., to different channel frequencies. To the contrary, each of Mody's data symbols within a data frame corresponds to the *same tone* – the unique frequency of the data frame's transfer branch. As described above, each data frame corresponds to a separate sub-channel, and each sub-channel has a unique frequency. (Col. 4, lines 2-5; col. 5, lines 59-67). Therefore, Mody's data frames do not include a plurality of data symbols that each correspond to different ones of a plurality of tones.

The Examiner responds to Applicant's earlier arguments by pointing to col. 7, lines 7-27 and col. 10, line 57–col. 11, line 5 of Mody. However, these passages do not relate to Mody's data symbols at all. Rather, they discuss Mody's *training* symbols – which are nothing like Applicant's claimed first training symbol, despite the misleading similar terminology. Unlike data symbols, which represent actual data values, Mody's training symbols represent calibration or parameter information for a particular sub-channel. (Col. 6, lines 27-33). Mody's training symbols do not comprise a plurality of data symbols – the training symbols are separate from the data symbols, and are in fact *inserted between* Mody's data symbols to facilitate calibration of each sub-channel. (Col. 6, lines 1-11, 26-31). Additionally, Mody's training symbols do not correspond to different tones. Each training symbol is particularly designed and adjusted to represent the calibration values for a particular sub-channel. (Col. 6, lines 20-25, 38-44). Therefore, not only do the cited passages of Mody relate to calibration signals rather than data signals, they relate to calibration signals that are *particularly designed and adjusted* for a unique sub-channel frequency. Mody does not show a first training symbol that comprises a plurality of data symbols, wherein each of the plurality of data symbols corresponds to different ones of a plurality of tones. Applicant respectfully submits that claim 1 is allowable over Mody for at least these reasons.

Mody does not show a first training symbol that comprises a plurality of data symbols, wherein each of the plurality of data symbols corresponds to different ones of a plurality of tones. Therefore, independent claims 10, 16, 20, 29, 35, 44, 50, 59, 65, and 74, and claims depending from any of claims 1, 10, 16, 20, 29, 35, 44, 50, 59, 65, and 74, are allowable for at least the reasons set forth above with respect to claim 1.

**II. The cited art does not show that each of a plurality of antennas transmits a corresponding one of the plurality of data symbols of the first training symbol.**

Claim 1 further recites that each of a plurality of antennas transmits a corresponding one of the plurality of data symbols of the first training symbol. The Examiner suggests that Mody shows this limitation in Fig. 1 and in the discussion accompanying Fig. 4. However, as shown in Fig. 1, each of Mody's transmitting antennas corresponds to a single sub-channel. Therefore, each antenna corresponds to a single data frame: the data frame of the antenna's particular sub-channel. (Fig. 1; col. 2, lines 32-35; col. 5, lines 54-67). As shown in Fig. 4, each antenna transmits a separate data frame. (Fig. 4; col. 2, lines 29-32; col. 4, lines 5-7). Mody does not show that each of a plurality of antennas transmits a corresponding one of the [training signal's] plurality of data symbols; in other words, Mody does not show that each antenna separately transmits a portion of a single training symbol. Rather, Mody shows that each antenna transmits the data frames of its corresponding sub-channel, in their entirety.

The Examiner asserts that "[Mody's] data symbols are encoded, modulated, and transmitted from the transmitting antennas 18. Therefore, each of the plurality of antennas transmits a corresponding one of the plurality of data symbols." However, Applicant respectfully points out that claim 1 does not recite that each antenna merely transmits a data symbol: claim 1 recites that each antenna transmits one of the data symbols *that make up the training symbol*. In other words, each antenna transmits a portion of the larger training symbol. Mody's antennas do not each transmit part of a single training symbol. Applicant respectfully asserts that claim 1 is allowable over Mody for at least these additional reasons.

Mody does not show that each of a plurality of antennas transmits a corresponding one of the plurality of data symbols of the training symbol. Therefore, independent claims 10, 16, 20,

29, 35, 44, 50, 59, 65, and 74, and claims depending from any of claims 1, 10, 16, 20, 29, 35, 44, 50, 59, 65, and 74, are allowable for at least the reasons set forth above with respect to claim 1.

**III. The cited art does not show a second training symbol that comprises the plurality of data symbols in the first training symbol.**

Claim 2 recites transmitting a second training symbol [that] comprises the plurality of data symbols in the first training symbol.

The Examiner suggests that the  $N_1$  training symbol transmitted on Antenna 2, shown in Mody's Fig. 4, is Applicant's claimed second training symbol. Applicant respectfully submits that Mody does not show a second training symbol that comprises the plurality of data symbols in the first training symbol. Mody is explicit that its training symbols are "designed and adjusted" to be "unique to the particular sub-channel." (Col. 6, lines 20-24). The training symbols transmitted by any one of Mody's antennas – by Antenna 2, for example – are different from the training symbols transmitted by any other antenna. Therefore Mody does not show a second training symbol comprising the plurality of data symbols in the first training symbol. Applicant respectfully asserts that claim 2 is allowable over Mody for at least these additional reasons.

Mody does not show a second or subsequent training symbol [that] comprises the plurality of data symbols in the first training symbol. Therefore, claims 13, 17, 21, 29, 36, 47, 51, 62, 66, and 75, are allowable for at least the reasons set forth above with respect to claim 2.

**IV. The cited art does not show determining a gain at each of the plurality of antennas for each of the plurality of tones.**

Claim 10 is directed to a method that includes receiving a first training symbol transmitted by a plurality of antennas. The first training symbol includes a plurality of data symbols and each of the plurality of data symbols corresponds to different ones of a plurality of tones. Each of the plurality of data symbols is received from a corresponding one of the plurality of antennas. In response to at least the first training symbol, a gain is determined at each of the plurality of antennas for each of the plurality of tones.

The Examiner suggests that Mody's synchronization circuit, shown in Fig. 8, meets this limitation. However, Mody's synchronization circuit does not determine a gain at each of the plurality of antennas for each of the plurality of tones. Mody's synchronization circuit corrects

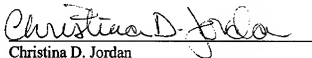
differences between the frequencies of the transmitter and receiver oscillators. (Col. 12, lines 45-51). The synchronization circuit estimates the starting times of received data frames and generates corresponding feedback signals to a pre-amplifier and to frequency offset estimation and correction circuits. (Col. 12, lines 52-65). These feedback signals do not determine a gain at each of the plurality of antennas for each of the plurality of tones, i.e., do not determine the signal level at each antenna. Rather, the feedback signals "estimate[e] the approximate starting time of the OFDM frame." (Col. 12, lines 56-59). Applicant respectfully asserts that claim 10 is allowable over Mody for at least these additional reasons.

Mody does not show determining a gain at each of the plurality of antennas for each of the plurality of tones. Therefore, independent claims 29, 44, 59, 65, and 74, and claims depending from any of claims 10, 29, 44, 59, 65, and 74, are allowable for at least the reasons set forth above with respect to claim 10.

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Respectfully submitted,

Date: 8/13/07

  
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